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Art. XI.—*A Study of the Prognathism of the Tasmanian Aboriginal.*

By L. W. G. Büchner

(Government Research Scholar in the Anatomy Department of the University of Melbourne).

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According to Topinard (1), prognathism has, since the time of Prichard, been understood to mean "the elongation and prominence or the obliquity of the jaws, common in the black races of Africa and Oceania, accidental in some Europeans." As thus defined, Topinard has divided prognathism into two categories. (1) superior facial, and (2) inferior facial.

The former he still further subdivides into three divisions:—

(a) The entire facial prognathism.
(b) The superior facial prognathism.
(c) The alveolo subnasal prognathism.

The latter he divides into two:—

(a) The inferior dental prognathism.
(b) The inferior maxillary region, the teeth being independent of the jaws.

In reviewing the various methods of determining that form of facial projection already defined as "superior facial," Topinard gives a brief resumé of ten methods, which include such well-known angles as Camper's facial angle, Welcker's nasobasal angle, Vogt's angle (a modification of Welcker's angle), Vogt's palatine and vomerian angle, and Virchow's method, the old German method, that is, the comparison of the glabella-occipital line with the alveolo-occipital line; Busk's facial radii, Broca's auricular radii, the same author's projection method, Lucae's method, and, finally, Topinard describes his own method, by means of which he estimates the "true" prognathism, determined by means of the angle formed by the profile line with the horizontal plane.

Ihering (2) and Lissauer (3) likewise give a resumé of the methods employed by the German school up to 1872.

With the possible exception of Topinard's method, most of the above are now out of date. The more modern means of determining prognathism and dolichocephaly will be discussed later.

Of the factors which produce prognathism, many investigations have been made; for example, Duckworth (4) points out that prognathism is dependent on two factors, firstly, the size of the teeth and

the length of the palate, and secondly, the size of the nasopharynx, which may be estimated by the distance from the pharyngeal tubercle and basi-occipital to the palatal spine, and thirdly, the degree to which the base is bent at the sphenoethmoidal junction.

Keith (5) has also devoted some thought to this problem, and in an extract from "Nature," he states:—"The prognathism of the negro is due to several factors; it is chiefly due not so much to a larger, but a healthier dental development, which ensures a due forward revolution of the jaws during the eruption of the permanent teeth, thus providing an ample air-way through the pharynx. In Europeans the revolution forwards of the jaws showed a distinct tendency to become arrested prematurely, thus contracting the pharynx. The negro condition was the more simian, but it also one which modern Europeans would willingly share with him, because of its functional methods."

The correlation between prognathism and other cranial features has also been exhaustively studied. Thus Thomson (6) says that an association between dolichocephaly and prognathism has been widely recognised, and he himself finds that prognathism is generally correlated with an extension backwards of the occipital region, a view Daffner (7) also holds. Brinton (8) considers this correlation between prognathism and dolichocephaly is brought about by increased muscular action. But, whatever the cause of such association of prognathism and dolichocephaly may be, Flower (9), Wohlbold (10) and Duckworth (11) are each clearly of opinion that it is, as exemplified in the case of the Australian aboriginal, a characteristic of race.

Huxley (12) was of opinion that there existed a relationship between prognathism and the slope of the foramen occipitale magnum. The greater the facial skeleton, that is, the more pronounced the degree of prognathism, the more perpendicular was the slope of the foramen occipitale magnum found to be. By superposing median diagrams of the highly prognathic skulls of a negro, Australian and Tartar, he found that the slope of the foramen occipitale magnum in these particular sculls formed a somewhat smaller angle with the basi-cranial axis, than was the case in orthognatic skulls. On the other hand, Welcker (13) failed to see any connection between prognathism and the slope of the foramen occipitale magnum, but thought there was some correlation between prognathism and the position of the opening, which, as Bolk (14) says, "comes practically to the same thing, if a connection between position and slope be assumed." Welcker (15) says, "Biegt am Vorderschädel der Oberkiefer des Menschen mehr nach vorn (Prognathismus) so rückt zugleich am Hinterschädel das Foramen medullare mehr nach rückwarts." Aeby's (16)

views do not agree with those of Huxley. He says, "Huxley glaubte die Neigung mit dem Prognathismus in Verbindung bringen zu können. Die Steilheit der Stellung sollte in gleichem Masse wie die letztere wachsen. In unseren Tabellen findet sich keine Bestätigung dieser Ansicht." Hopf (17), Darwin (18), (19), Spencer (20), Keith (21), Duckworth (22), Wiedersheim (23), Schaafhausen (24), have each and severally considered the successive stages of growth of the maxillary region, and the reasons therefor, in order to determine, if possible, the causes which produce or accompany an increase or reduction, as the case may be, in the amount of prognathism present.

Without pursuing further the subject of factors responsible for prognathism, and their association with other cranial features, it should be sufficiently clear that much attention has been devoted to both aspects of the question, and that our knowledge of the subject is correspondingly enhanced.

Of the modern methods of determining prognathism by direct linear measurements, mention may first be made of Flower (9), who calculated the prognathism of the skulls in the Museum of the Royal College of Surgeons, London, by what is now known as Flower's Gnathic, or Alveolar Index—an index which expresses the ratio which the basi-nasal line bears to the basi-prosthionic line, the former being taken as 100 (see Fig. I.).

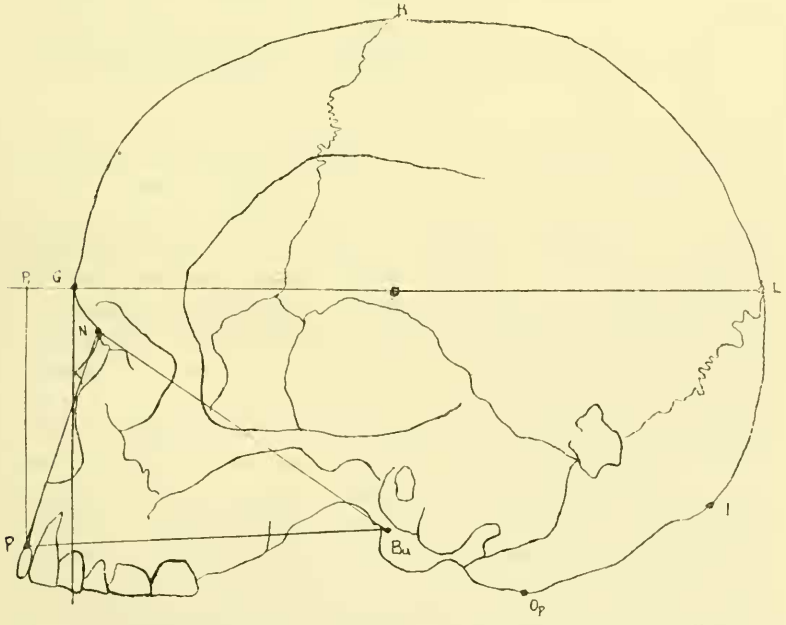


Fig. I.—Illustrating Flower's Gnathic Index, and Fraipont's Methods. G=Glabella: Pr=Prognathic point: N=Nasion: Ba=Basion: L=Lambda.

Fraipont, in order to estimate the forward projection of the premaxillary region, introduced at the 1903 Liège Congress of French Anatomists, a new method, employed by him in his investigations upon the Spy crania. The method consists in producing the glabella lambda line forwards, and then dropping perpendiculars at right angles to it (Fig. 1). The one drawn from the glabella, usually cuts the second premolar, and, more rarely, the first molar, and is occasionally known as "Fraipont's line. The point of intersection of the line drawn parallel to Fraipont's line, and cutting the prosthion, with the glabella-lambda line, continued forwards constitutes Klaatsch's "Prognathic point" (25), (Fig. 1). The distance from the glabella to the "prognathic point" expresses, in millimetres, the amount of prognathism present, that is, the amount of facial projection in front of the glabella. Fraipont, from the results thus obtained, deduced the fact that the amount of facial projection, or prognathism, in the Spy crania, was greater than had been previously suspected (Fig. 1).

Thomson and MacIver (26), consider that the method devised by Flower has several weak points, and they therefore depart from it in their examination of the ancient Egyptian crania. In their proposed method, they take into consideration two factors which present themselves in the upper jaw; firstly, the degree of variation in the vertical face length, that is, the nasi-prosthionic length, and secondly, the variations in the horizontal length of the basi-prosthionic line. By connecting three points—the basion, prosthion and nasion—a triangle is formed.

From a series of measurements of 38 skulls, these authors found that the angle formed by the basi-nasal line and the Frankfort horizontal plane varied between 22 degrees and 34 degrees, with an average of 27 degrees. They availed themselves of the constancy of this angle in order to construct a new horizontal, upon which to estimate the degree of prognathism, their procedure being as follows:— Prolong the basi-nasal line indefinitely downwards and backwards, upon this erect a horizontal, at an angle of 27 degrees, open forwards with the basi-nasal line. This line may be prolonged indefinitely backwards and forwards, and the figure is now converted into a triangle, by dropping from the nasion a perpendicular, which cuts the new horizontal at a right angle. (See Fig. 2). The amount of projection of the prosthion in front of the perpendicular line N-P indicates the degree of prognathism, and is read off by means of their specially-devised trigonometer. Fürst (27) has also studied this method, but he comes to the conclusion that the basal angle possesses so great a degree of variation that he cannot, like Thomson and MacIver, accept a constant size for it. He says, "Aus allem, was ich

oben angeführt habe, geht deutlich hervor dass, wenn wir mit einer normalen Grösse des Basalwinkels rechnen wollen, dieser wohl 30 Grad angesetzt werden muss. Aus den Tabellen wird es aber auch deutlich, dass die Grösse des Basalwinkels eine so weite Variationsbreite hat, dass man nicht wie Arthur Thomson und Randall MacIver bei ihm eine konstante Grösse annehmen und danach andere anthropologische Merkmale angeben kann."

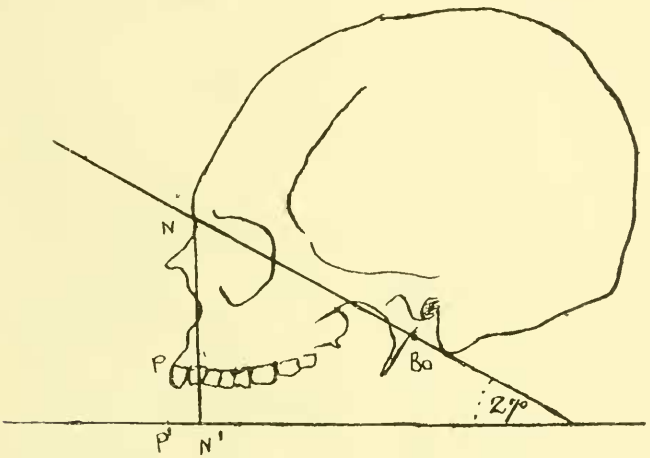


Fig. 11.—Illustrating Thomson and MacIver's Method.
N=Nasion: P=Prosthion: Ba=Basion.

Keith (28), in describing a new craniometer, states that "the most satisfactory index is in the area of the palate, estimated by plotting out the diameters of the palate on millimetre paper." This he does by means of the instrument he describes, but as this was not available in Melbourne, I have been unable to adopt his suggestion. In any case, it is, perhaps, open to question, whether, in view of the fact that the present research is largely comparative, it would have been advisable to adopt methods which so obviously restrict the field of comparison.

From the foregoing brief analysis of such comparatively modern methods of estimating prognathism, as those associated with the names of Flower, Thomson and MacIver, Fürst and Keith, it is apparent that none are entirely satisfactory, or altogether free from objection. It has been shown that Fürst differs from Thomson and MacIver, as to the constancy of the basal angle, whilst Keith's method not only requires a special apparatus, but also special modes of investigation. Turner (29) had apparently this same difficulty in mind when he wrote, in reference to the estimation of prognathism of the Tasmanian crania in the Oxford collection:—"The differ

sults procured by these methods on the same skulls illustrate the difficulty of obtaining a precise estimate of the degree of prognathism."

With the exception of Keith's method, all were introduced prior to the invention and general adoption of the dioptrograph and diagraph, and it is questionable whether all that is claimed by the authors quoted for their special methods cannot really be better done now with the diagraph. In any case, the perpetual multiplication of new methods and special instruments for the same purpose, renders it almost impossible to collect sufficient data for the comparative investigation of the several races. For all these reasons, therefore, I have thought it advisable to confine myself to dioptrographic tracings, which, for the Tasmanian, have now been rendered available to all by Berry and Robertson, and to record the degree of prognathism by Flower's method. This procedure has the great advantage over and above all the others herein discussed, that it enables me to institute a series of comparative observations of the Tasmanian with other races. Personally, I am of opinion that in this way only will any real progress be made in the complex science of the craniology of race.

The material upon which the present research is based will be found in Berry and Robertson's "Dioptrographic Tracings in Four Normae of Fifty-Two Tasmanian Crania" (30). All the observations recorded herein are calculated from the median sagittal tracings, shown in Norma A, and are as follow: —

1. The basi-nasal length.
2. The basi-prosthionic length.
3. Gnathic index.
4. The nasi-prosthionic length.
5. The glabella prosthion basion angle.
6. The prosthion glabella basion angle.

Of these observations, the first three comprise the data necessary for the estimation of prognathism by Flower's method, and the last three are supplementary measurements, upon which to estimate the general projection and height of the face.

As stated elsewhere (31), it was not possible to record all of the observations on every skull. Number 48, being a juvenile subject, the measurements recorded on it have been uniformly omitted from the final results. The results of Numbers 4 and 8 have also been omitted where they concern the prosthion.

In Table I. are set forth the individual observations upon the crania referred to.

In the two columns on the left are recorded the original numbers and their serial numbers. In the columns to the right the several

observations recorded are displayed, with the crania separated into sexes, and the results tabulated accordingly. At the foot of the male and female observations respectively, the minimum and maximum figures are recorded, together with the average results. The total results, for both males and females are set forth at the end of the table.

TABLE I.—MALES.

Original number.	Serial number.	Basi-nasal length.	Basi-prosthionic length.	Gnathic index.	Nasi-prosthionic length.	Glabella prosthion basion angle.	Prosthion glabella basion angle
4288	1	95	101	106.3	67	69	66
4298	2	100	106	106	73	69	66
4300	3	..	..	...	55	...	...
4301	4	100	94 ?	94 ?	58	80	61
4298	5	...	...	...	67	...	...
4302	12	+106	99	−93.4	74	77	−58
4297	13	..	...	...	70	..	...
4296	16	102	...	...	...	..	...
...	18	−92	98	106.5	−53	76	+67
1	19	97	94	96.9	59	80	62
...	23	...	...	...	...	...	...
...	24	99	103	104	62	74	66
1201	25	103	110	106.8	73	75	66
1203	27	...	...	...	59	.	...
1204	28	98	95	96.9	65	76	60
1205	29	98	102	104.1	70	75	61
1	30	94	106	112.8	+76	65	61
1	32	93	99	106.5	56	77	66
2	33	104	98	94.2	65	−62	−58
3	34	90	−88	97.8	60	80	58.5
4	35	100	99	99	60	76	63
5	36	98	101	103.1	60	77	64
6	37	.	...	.	56	.	.
7	38	97	94	96.9	62	+81	60
1	39	−92	92	...	...	.	...
3	40	96	96	100	62	75	62
5	42	96	96	100	59	75	63
6	43	103	+111	108.8	67	72	+67
7	44	99	.	...	...	.	...
8	45	94	98	104.3	67	73	63
9	46	94	99	105.3	61	76	64
13	50	.	.	...	.	.	...
Number	32	25	21	21	27	21	21
Maximum	...	92	88	93.4	53	62	58
Average	...	97.6	99.6	102.3	63.6	74	62.8
Maximum	...	106	111	112.8	76	81	67

FEMALES.

4287	6	89	91	102.2	60	74	65
4293	7	90	90	100	59	75	63
4289	8	92	80 ?	86.9?	.	+35	−52
3362	9	85	...	...	..	...	...
4294	10	93	...	...	...	...	..
4292	11	...	.	...	+66	...	...
4290	14	100	97	...	−97	61	75
4295	15	...	.	...	...	...	...
4303	17	93	100	...	−52	77	65.5
2	20	91	...	...	...	...	...
1572	91	86	96	111.6	...	...	...
...	22	...	...	...	...	...	...

Original number.	Serial number.	Basi-nasal length	Basi-prosthionic length.	Gnathic index.	Nasi-prosthionic length.	Glabella prosthion basion angle.	Prosthion glabella basion angle.
1202	26	93	100	107.5	63	−70	+69
9	31	+102	+102	100	69	77	64
4	41	89	89	100	60	178	60
10	47	−78	...	...	...	...	...
12	49	86	89	103.5	60	73	63
12922	51	89	−88	98.9	60	77	59
12997	52	99	96	−97	59	77	62
11	J48	76	82	107.8	58	66	68
Number	19	16	11	11	11	10	10
Minimum	...	78	88	97	52	70	52
Average	...	91.1	93.7	101.6	60	75.3	63.3
Maximum	...	102	102	111.6	66	85	69

BOTH SEXES.

Number	51	41	32	32	38	31	31
Minimum	...	78	88	93.4	52	62	52
Average	...	95	97.5	102	61.2	74.6	63
Maximum	...	106	111	112.8	76	85	69

For both sexes combined there are 32 crania, which yield a gnathic index of 102, that is, the Tasmania is shown to be mesognathic. Of the sexes considered separately, there are 21 males, with a gnathic index of 102.3, and 11 females, with an index of 101.6, that is, the sexes, individually or collectively, are shown to be mesognathic in type.

Prior to the present work, the largest number of Tasmanian crania examined, with respect to the degree of prognathism, as determined by Flower's index, was 34, a total made up of a combination of individual examinations, and thus collectively referred to by Turner (29). The minimum index was 96.9, the maximum 113.2, and the mean for the series was 103.6, which thus brings the series into the prognathic group.

It will be noted that the two series of figures produce different results, my series of 32 giving a mesognathic result, and the previous collective group of 34 producing a prognathic figure. The actual numerical difference is, however, but slight, as it only amounts to 1.6, and is almost certainly due to the use of insufficiency of numbers. To overcome this objection in so far as is possible to us, I now propose to combine my own entirely new series, of 32 crania, with those of other observers.

I have, therefore, availed myself of the necessary figures recorded in (a) Flower's Catalogue of osteological specimens in the Museum of the Royal College of Surgeons, in London (9), (b) Turner's Memoir, in which are given the observations of the crania in the Brussels Museum, the University of Oxford, and the University of Edinburgh, (c) Klaatsch's Memoir (32) on the Australian skull, (d) one from the

Middlesex Hospital Museum, and (e) Duckworth's (33) study of the Tasmanian crania in the Cambridge Anatomical Museum.

This makes, combined with the figures of the present work, a total of 74 basi-nasal, 66 basi-prosthionic, and 66 gnathic index observations of Tasmania crania, which, it may be noted, is by far the largest number of Tasmanian crania as yet investigated in connection with the question of the prognathism of this now extinct race.

The detailed results of the combined figures, and also of my original figures, are set forth in Table II.

TABLE II.

	Number	Büchner Number	Turner Number	Combined Results
1. The basi-nasal length	41	95	... .	74	96.60±.47
2. The basi-prosthionic length	32	97.5	... ...	66	98.70±.50
3. Gnathic index	32	102	34	103.6	66	102.38±.30

This table shows that the gnathic index of the 66 Tasmanian crania utilised for the investigation gives a true mean of 102.38±.30, that is, the Tasmanian is mesognathic, but stands at the extreme end of the scale, and is just on the confines of mesognathism and prognathism.

It is clear that these figures must be accepted as furnishing the correct estimate of the degree of prognathism, for two reasons: firstly, because they comprise the largest number of Tasmanian crania ever previously examined for this purpose, many of which are entirely new to science, and secondly, because the final results are attained by biometric methods, and not by the laws of arithmetical average.

Further, it is clear that the position of the Tasmanian on the meso-prognathic borderland, explains many of the discrepant results attained by previous workers with other methods, and insufficient data; for example, we have here, I think, an entirely adequate explanation of the somewhat conflicting results achieved by such competent observers as Turner (29) and Thomson.

For the purpose of establishing a comparison between the prognathism of the Tasmanian and that of other races, I have utilised, for the former, all the figures available to me, in all 74 observations. From these I can only avail myself of 66 gnathic indices, for the sufficient reason that in the remainder one or other of the necessary measurements was missing. The selected races for comparison are the Australian, the Veddah, the Chinese, and Andamanese, and the modern Italian. The selection so made is not a mere casual one, but is specially chosen as furnishing examples of admittedly pure races, like the Andamanese, impure types like the modern Italian, and races of doubtful purity, like the Australian. The figures in each instance are taken from Flower's Catalogue, and the results are set forth in Tables III.-V.

Table III. deals with the basi-nasal length, and shows the provisional mean, the true mean, and the standard deviation of same, and the co-efficient of variation, together with the numbers of examples of each race. The six races are arranged in the order of the true means of the basi-nasal length.

From this we infer that the basi-nasal length is shortest in the pure races (Andamanese, Veddahs and Tasmanians), longest in im-

TABLE III.

Basi-nasal Lengths.

	Number	Provisional mean	True mean	Standard deviation	Coefficient of variation
1. Andamanese	19	91	91.26± .44	2.84±.31	3.11±.34
2. Veddah	10	96	95.60±1.29	6.08±.92	6 37±.96
3. Tasmanian	74	94	96.60± .47	6 02±.33	6.24±.35
4. Chinese	35	97	97.23± .63	5.53±.44	5.71±.47
5. Italian	50	99	98.62± .62	6.46±.44	6.51±.45
6. Australian	88	99	98.75± .41	5.77±.29	5.85±.30

impure races, like the Chinese and modern Italians, and longest of all in the doubtfully pure Australian.

Table IV. deals with the basi-prosthionic length for the six races in the same way. The Australian, again, has the longest basi-prosthionic axis, and the pure Veddahs and Andamanese have the shortest. The Tasmanians and Italians have changed places, and the Chinese are in the same relative position as before.

TABLE IV.

Basi-prosthionic Lengths.

	Number	Provisional mean	True mean	Standard deviation	Coefficient of variation
1. Veddahs	7	91	91 00±1.34	5.26±.05	5.85±1.06
2. Andamanese	19	93	92.74± .72	4.64±.51	5.00± .55
3. Italians	50	92	94 62± .68	7.11±.48	7.52± .51
4. Chinese	30	96	98.70± .55	4 74±.39	4.95± .43
5. Tasmanians	66	98	98.70± .50	6.00±.35	6.08± .36
6. Australians	90	101	100.91± .47	6.60±.33	6.54± .33

In Table V. are set forth the gnathic indices for the six races, whence we learn that Italians, Veddahs, and Chinese are orthognathous, the last-named being on the ortho-mesognathic borderline. The Andamanese are distinctly mesognathic, as are also the Tasmanians, but, as already indicated, it is, on the whole, fairer to regard the Tasmanian as on the meso-prognathic borderline, a remark

which also applies to the Australian, with the reservation that the latter is more prognathic than the Tasmanian.

TABLE V.

GNATHIC INDICES.

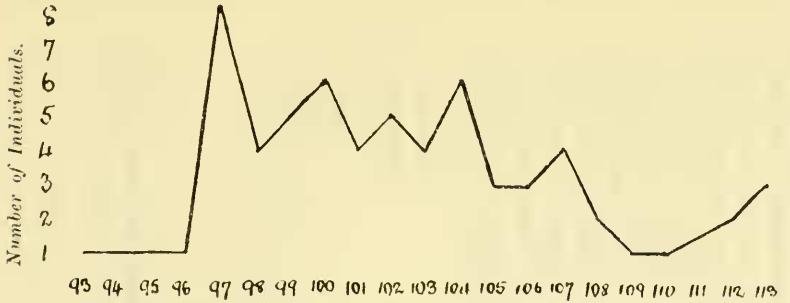
	Number	Provisional mean	True mean	Standard deviation	Coefficient of variation
1. Italians	50	96	95.92±.34	3.54±.24	3.69±.25
2. Veddahs	6	96	96.00±.72	2.80±.52	2.8 ±.55
3. Chinese	32	98	97.94±.48	4.03±.34	4.11±.36
4. Andamanese	19	102	101.32±.55	3.60±.39	3.56±.40
5. Tasmanians	66	102	102.08±.40	4.83±.28	4.73±.28
6. Australians	88	102	102.38±.30	4.13±.22	4.04±.21

In view of the fact that Table V. only includes six Veddahs, it would, I think, be better to exclude them from the comparison. This having been done, there emerges the broad fact that the more primitive races of mankind tend to be less orthognathic than the higher races, a conclusion which the following extract from Wiedersheim (23) supports:—"The prognathous type of skull has been assumed to be a reversion to a pithecoid condition; but this consideration is by no means a simple one. The cousins Sarasin have pointed out that the lowest forms of human skulls, e.g., those of Veddahs, Andaman Islanders and Bushmen, are of orthognathous, or (Andaman Islanders) mesognathic type. The orthognathous type may thus have been attained by human beings at a very early period, and subsequently lost. If this be the case (but it is doubtful), the prognathous condition of Negroes and Melanesians, and the great projection of the jaw in some woolly and straight-haired races, must be a secondary condition, which has been preceded by orthognathy. In this case the orthognathy once more attained by Europeans must be regarded as a third phylogenetic phase of the evolution of the skull (Sarasin)."

A further examination of Table V., from the standpoint of racial impurity or otherwise, reveals little or nothing. The standard deviation, which reflects to a certain extent the influence of the range of variation, is found to be greatest in probably the purest race of all, namely, the Tasmanian, and, excluding the Veddah, for the reason already given, least in the known and admittedly impure race, the modern Italian. Looked at from this standpoint, we find that, as regards the standard deviation, the five races compared (Veddahs excluded) may be arranged in an ascending series as follows:—

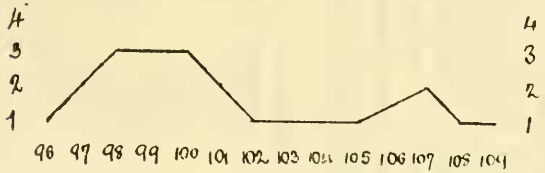
Modern Italian	3.54
Andamanese	3.60
Chinese	4.03
Australian	4.13
Tasmanian	4.83

Fig. III.—Frequency Polygons of Gnathic Indices.



4. Tasmanians (66)

1. Modern Italian (50)



2. Chinese (32).

3. Andamanese (19)

5. Australians (88)

Notwithstanding that there are at the two ends of the scale known pure and impure races, it is sufficiently clear that it would be very injudicious to endeavour to draw any conclusions whatsoever as to the purity or impurity of race from the range of variation of a secondary racial character like prognathism. What, however, does emerge very clearly from the present research is that the Tasmanian is, as estimated from Flower's gnathic index, on the meso-prognathic border line, and slightly more orthognathic than the Australian.

In conclusion, there are appended five frequency polygons of the gnathic indices in the selected races, and Table VI., which establishes comparisons of the prognathic index, and measurements between anthropoid apes, prehistoric and recent man. (See Fig. III.).

The anthropoid figures are derived from Oppenheim (34), and from them I have calculated the gnathic index.

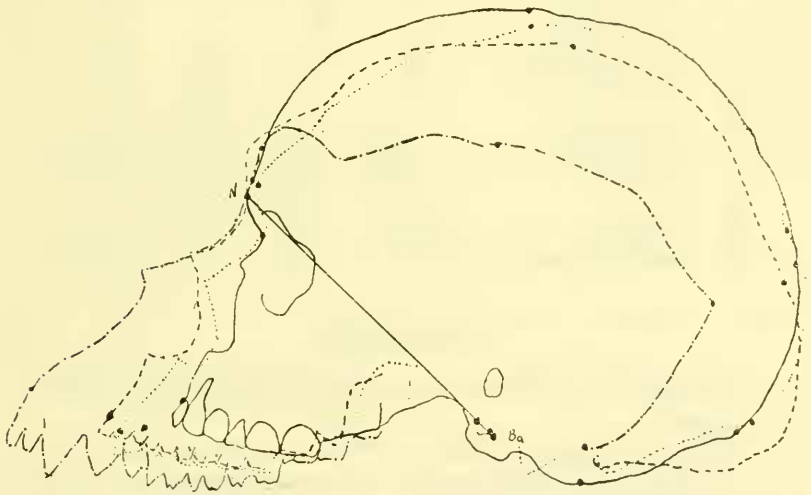


Fig. IV.—Tasmanian _____
Australian.....
Neandertal (Klaatsch) - - - - - - - - - - - -
Glorilla — · — · — · — · — · — · —
(Superposed on basi-nasal axis.)

The remaining measurements are mostly from Flower's Catalogue, supplemented in the case of the mesognathic 90 Australians by figures derived from other sources. Concerning the Tasmanians, the 32 there included are the original contribution of this work to the subject.

The entire results are classified according to their degree of pro-meso-, or orthognathism, but it is important to bear in mind that the results set forth for the 90 Australians, 32 Tasmanians, 19 Andamanese

and 32 Chinese have been re-calculated by me by biometric methods, and are therefore more accurate than the remainder, which are only arithmetical averages.

The entire table contains an interesting survey of the subject of prognathism from an evolutionary and racial standpoint, and is fairly free from the objection which so commonly attaches itself to such tables of too sweeping deductions from an insufficiency of numbers.

TABLE VI.

Number.		Basi-nasal length.	Basi-prosthionic length.	Gnathic index.	
43	Orang Utan (female)	92	162	176	Prognathic.
	Orang Utan (male)	96	164	170	
40	Chimpanzee (male)	101	133	131	
	Chimpanzee (female)	102	129	125	
55	Gorilla (male)	140	173	123	
	Gorilla (female)	123	148	120	
	Gibraltar (Sollas)	106	112	105.7	
36	African Negroes	98	102	104.4	
58	Melanesians	96	103	103.4	
90	Australians	98.75	100.91	102.38 ± .30	Meso-gnathic.
32	Tasmanians	96.60	98.70	102.08 ± .40	
19	Andamanese	91.26	92.74	101.32 ± .55	
29	Hindus	101	94	98.7	Ortho-gnathic.
32	Chinese	97.23	95.70	97.94 ± .48	
184	Europeans	98.1	92	96.2	
50	Modern Italians	98.6	94.6	95.92 ± .32	

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